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Summary. This paper argues on why Community Based Networks should be recognized as potential 5G providers using 5G Wi-Fi. The argument is hinged on findings in a research to understand why Community Based Networks deploy telecom and Broadband infrastructure. The study was a qualitative study carried out inductively using Grounded Theory. Six cases were investigated. Two Community Based Network Mobilization Models were identified. The findings indicate that 5G Wi-Fi deployment by Community Based Networks is possible if policy initiatives and the 5G Wi-Fi standards are developed to facilitate the causal factors of the identified models.

Introduction

This paper discusses the potential relationship between rural Community Based Networks and 5G Wi-Fi infrastructure and service diffusion and adoption. The empirical investigation is on why Community Based networks mobilize to develop telecom infrastructure. The data is used to argue for the importance of Community Based Networks in the emerging 5G market. The empirical data are extracted from the Ph.D research of the author, carried out at CMI, Aalborg University Copenhagen. This includes six cases, three each from developed and developing countries respectively. The cases studied were, were the Djurslandsnet (Denmark), Magnolia Road Internet Coop (USA), Hallaryd Broadband Coop (Sweden), Johanesburg Wireless User Group (South Africa), Ghana Wireless project (Ghana) and the Dharamsala Wireless Network (India). Aside the Hallaryd Broadband Coop, who facilitated Fiber-to-the-Home (FTTH), the other cases deployed Wireless Broadband solutions delivered via the 802.11 sets of standards.

In that research two models were developed using the Grounded theory approach. These models are called the Community Based Network Mobilization Models (CBNM

Models). These models are used to support the argument of this paper. This paper argues; if policy makers and standard developers can identify Community Based Networks as valid market players, wireless standards that will enable the Community Based Network adopt and deploy state of the art wireless technologies can be developed. An example of such state of the art technology is the proposed 5G Wi-Fi. The CBNM Models provide inspiration on the causal factors that will enable a Community Based Network to adopt and implement a technology for the good of its community.

The 5G Wi-Fi idea is inspired from proposals towards upgrading the existing 4G, Wi-Fi to 5G Wi-Fi (Andrews, et al., 2014). 5G, though still being developed and conceptualized, may end up becoming a disruptive standard just as 3G and 4G networks. The reason for this being the fact that the rapid development of mobile and wireless standard does not provide network operators the opportunity to break even from deploying previous wireless standards. In many cases, urban areas enjoy the benefits of the new standards, while rural areas are left out. Although the quest towards developing 5G is noble, the diffusion of 5G may be stalled by market forces, unless a new set of market players emerges. This new set of market players, would provide complementary 4G services to the emerging 5G services. Hence, since the market is yet to be defined, it is important to identify the certain 5G standard and the potential market player. This is what this paper intends to do.

The proposal and probable development of 5G Wi-Fi seem to open up a new opportunity for 5G networks. This opportunity rests on the fact that there exist community initiatives, where communities in urban and rural areas in developed and developing countries have embarked on the development of Wi-Fi networks. These are market players who would aid the diffusion of 5G into rural areas. These groups do have a tradition of telecom infrastructure development that dates back to the early telephony days (See (Williams, 2015)). These manifestations of the peoples' interest in telecom infrastructure development have been sustained till date. These Community Based Networks are telecom market players (see (Kakekaspan, O'Donnell, Beaton, Walmark, Gibson, 2014)). However, they are often ignored as such. They are often viewed as localized groups with lack of technical expertise or financial capacity to facilitate telecoms network development (Yardley, 2012). They are only recognized as market players, when the networks metamorphose into becoming either an Internet Service Provider, a telecom social enterprise or commercial telecom carriers. Based on this fact, Community Based Networks are often ignored as entities that can adopt affordable telecom standards and eventually aid in the diffusion of the services. Though they are ignored, they seem to be the right player that can utilize the 5G Wi-Fi more productively if the causal factors identified in the CBNM models are fulfilled. Hence this paper frowns against the apathy shown on such network and encourages more study of such networks to understand its intrinsic propertied for the aim of positioning such networks as visible players in the 5G market.

1. Community based networks and telecom infrastructure development

Community Based Networks as viewed in this paper are any Information and Communication Technology (ICT) infrastructure developed by individuals, either as small organized groups or a community structure to maximize the benefits of the services provided by the network. These groups could be glued by social or personal circumstances as well as their economic, cultural and social needs (De Cindio, 2015; Siochrú, Girard, 2005). In other cases, such groups can be spurred on by the existence or a market failure in the delivery of the needed utility (Lehr, Sirbu, Gillett, 2006). However, such Community Based Networks are often an association of individuals who are poised to facilitate and democratically manage an Information Communication and Technology (ICT) enterprise (Siochrú, Girard, 2005). They are managed mostly by volunteers or by the "coalition of the willing" (Salemink, Bosworth, 2014).The enterprise of interest in this paper is that which is concerned with the facilitation of telecom infrastructure. Although one cannot overlook the fact that Community Based Networks can also be centered around community computing – as this was the case as the internet evolved via bulletin boards etc. (Ziewitz, Brown, 2013).

The growth of such networks is spurred by network effects created by the existence of the service. This network effect is spurred by the potential or perceived usefulness service to the individual. This is evident both in the attempts by cooperatives to facilitate telephone services in underserved areas (see Finquelievich, Kisilevsky, 2005). In the present time, the network effect is spurred by the usefulness of Broadband Internet services. Today communication is easier and faster than it was some years back, thanks to the Internet.

Community Based Networks that facilitated telephony service was evident in North America, Argentina and some parts of Europe (Siochrú, Girard, 2005). Some of the initiatives have evolved with the times to deliver cutting edge Internet services today (see Williams, 2015)). While some were either not useful as the market provided extended telecom coverage to such areas or the coops had metamorphosed into an Internet Service Provider. An example is Brookes telecom in Canada. Such Community Based Networks were organized as Cooperatives – especially in the west. In developing countries in places like sub-Saharan Africa, such coops were either non-existent or rare. However, in the west, there was a cooperative culture towards basic utility provision. Whereas in sub-Saharan Africa, as an example, the cooperative culture was geared toward personal economic empowerment. However, in the West, during the great depression the cooperative culture was harnessed to develop telephone coops (Viardot, 2013). The Inspiration for such telephony cooperatives emanated from earlier telephony cooperations.

As mentioned earlier in this paper, one can surmise that the existence of Community Based Networks aimed a developing Broadband infrastructure is inspired by the telephone coops. However, it will be unwise to suggest that every Broadband Community Based Network was inspired by the existence of telephone coops. In many cases, the development of such networks is borne by sheer determination and in other cases luck (Williams, 2015). In the case of luck, the enthusiast had either personal or non-commercial need for an ICT connectivity. In the course of experimentation, they realized that they could extend the network to more people in town or in the rural areas. This leads them to conduct an exhibition and mobilization effort. N example of such cases can be seen in South Africa. This is where one can identify Community Based Networks such as as Johannesburg Wireless user Group, Pretoria Wireless User Group, etc.

Although Community Based networks are often identified as bottom-up approaches to ICT development, they are not always initiated or wholly owned by the community (see Salemink, Bosworth, 2014; Tapia, Maitland, Stone, 2006; Shaffer, 2013; Oost, Verhaegh, Oudshoorn, 2007; Picot, Wernick, 2007). In some cases, especially in the EU and North America, there sometimes initiated in conjunction with the municipality or jointly owned by the municipality and the community. This is called hybrid ownership (Tapia, Maitland, Stone, 2006). In the case of this hybrid ownership, a telecoms provider is often invited to assist in either managing or developing the infrastructure. However, this is prevalent when communities opt to facilitate fibre optic connectivity to their homes. In the case of deploying low cost Broadband networks, using Wi-Fi, the people groups often facilitate the infrastructure delivery by themselves. This is why 5G Wi-Fi is given some importance in this paper.

This role of Community Based Networks can be enhanced as we march into the world of sensors enabled by 5G. As mentioned earlier in this paper, 5G services may not really diffuse to rural areas, if the trend of disruptive wireless standard development continues. In as much as this trend may not stop soon, this trend can be used to the advantage of the underserved a potential underserved. Based on this understanding, it is important to find out, how such community networks get to mobilize themselves around a technology in order to maximize the usefulness of the services. In this manner, one can have an insight on how to develop such 5G Wi-Fi standard and what policies are needed to promote the 5G Wi-Fi.

2. Overview of the cases studied

Six cases were studied. Three cases each from developed and developing country contexts. These cases were Community Based Networks. The overview of the developed country cases were as follows:

1. Magnolia Road Internet Coop (USA).

In 2001, Rob Savoy began discussions with Greg Ching on the possibility of setting up a broadband Internet Infrastructure in Magnolia Road, Colorado in the United States. At this moment, ISPs were setting up shop in the area. George Watson a technically inclined resident and the manager of Sugarloaf.net with his personal resources conducted some trials with the radio network at his home using Wi-Fi. The success led to him connecting to a neighbor's home and later trying long distance connections. The successful tests led to much enthusiasm from the enthusiast. The enthusiasts contributed their personal resources to facilitating the network and mobilizing fellow neighbors. They went for state funding as well as incorporated the coop. The success of the trials led to would be subscribers, providing US$ 300 loans to the coop to aid in expanding the network. In this manner, the Magnolia road internet coop was formed and financed.

2. Djurslandsnet (Denmark).

Djurslandsnet in 2005 metamorphosed into 10 independent Community Based networks. At the inception of Djurslandsnet in 2001, The group of volunteers or enthusiasts were keen on having the wireless Broadband network developed using Wi-Fi. Hence, they raised money via, coop membership fee, fee for access to the network and a monthly user fee. Unlike the other initiatives studied, their organization was not centralized. This was because, Djursland, before the Municipality reform of 2007 had 8 municipalities. The initial enthusiast led by Bjarke Nielsen had the vision of extending Broadband connectivity to the peninsula and its 8 municipalities. Hence, they formed a central coordinating board that coordinated the 8 sub-boards representing each municipality. This was a bottom-up initiative arranged along municipality lines. These boards were ruled by a central board which had the chairmen, secretary and treasurers of the sub board. This factors enabled them facilitate the development of the Wireless Broadband for the peninsular. Although the wireless network did split along the old municipality lines, they still exist and cooperate with each other today as they still have to interconnect with each other. This Wi-Fi network was interconnected to a fiber optic network with close proximity to the peninsula. Approximately 80,000 people live in the peninsular.

3. Hallaryd Broadband Coop (Sweden).

Background the case: The Almhult municipality, located in the Kronoberg Country in Sweden, developed a fiber-optic infrastructure to extend connectivity to their out stations in the municipality. The facilitation of this network created an opportunity for coops to build and own the access networks. Hence the municipality designed a PPP framework that had the private sector manage and operate the infrastructure on a three year lease. The private sector also provided access to 5 ISPs, 5 IP telephony and 2 IP TV providers. To aid the usage of this infrastructure, the municipality encourages local communities to form cooperatives, with the aim of facilitating Fiber-To-The-Home (FTTH) connectivity. The coops were organized along the lines of the old church parish systems as the municipality does not have internal administrative divisions. 9 coops were facilitated to handle the digging from the fiber optic infrastructure. The people had to pay between 25 000 SEK to 25000 SEK as one time access fee. The fee paid for the digging. The EU via the county provided funding alongside the municipality who provided 40 Million SEK for the project. The coop owns the access networks and pays interconnection fee to the municipality monthly. They also pay the private sector for services used by coop members.

The Hallaryd Case: A young couple from Hallaryd accepted the municipality invitation to learn about the municipality initiative. They were convinced by the municipality that people can be mobilized in the communities to facilitate a Fiber optic network, that will interconnect with the municipal infrastructure. The terms of engagement with the municipality sounded favorable to the couple. The couple informed a small social association, of whom they were members, about the initiative. These members informed their neighbors, by word of mouth and also by sending mails to fellow residents in the community. Interested members of the community started attending the municipal meetings and eventually formed the Hallaryd Broadband coop.

The developing country cases description were as follows:

1. Johannesburg Wireless User Group (South Africa).

Kieran Murphy a computer science student living in East Johannesburg, in 2001, mobilized his colleagues living in the same street to implement a Wi-Fi network. This network would enable them to play video games online as well as collaborate on their academic work. The successful implementation of this wireless network on the street led their colleagues and their neighbors to see the gaming and data possibilities made available by Wi-Fi. They were able to access, download speeds of 11mbps. The successful implementation of the project on a small case became visible to neighbors and friends. This visibility inspired interest in the network by the neighbors, leading to the expansion of the network. At the same period in other parts of Johannesburg, Cape town, Durban, Pretoria and other urban centers in South Africa, there were other innovators dabbling into the new technology leading to the springing up or what they called, Wireless User Groups. In 2006, these Wireless User Groups became a source of internet provision to people in some urban areas of South Africa. In the same year, splintered groups from different parts of Johannesburg merged to form the Johannesburg Wireless User group, providing Broadband Internet access to these areas.

2. Dharamsala Wireless Network now owned by Airjaldi (India).

Dharamsala is the home of the Dalai Lama. The rural area of this vicinity is situated in the mountainous areas. There were small NGOs in these areas that had no form of connectivity to the outside world before 1998. One NGO had a VSAT connection; hence the other NGOS had to use motorcycles through the rural areas to download information onto floppy disks from the NGO with VSAT connectivity. In 1998, Yahel Ben David, an individual who has been working to set up wireless networks was invited to aid in facilitating broadband connectivity to enable the NGOs and other institutions have access to the outside world as well as connect to vital institutions in Dharamsala. He came down with his family and with Wi-Fi cards in laptops and PCs; he was able to configure wireless access points and routers. He facilitated connectivity for the people and also extended network connectivity to different institutions. His vehicle of organization was a local NGO he initiated. This NGO was sustained by a group of local volunteers, and western volunteers as well. In 2005, Wi-Fi was deregulated in India and there were investors that saw the viability of the network. Hence, it was commercialized and the network was transformed into a social enterprise called Airjaldi.

Today Airjaldi has about 4 wireless networks in different parts of rural India. The Dharamsala network is their biggest network. Their Wi-Fi access points are powered by solar energy. The commercial entity was made possible as a result of the low entry barrier in accessing rural In India, rural ISP fee is cheap and one can register as a sub-ISP. If the ISP has a larger coverage, they can receive universal Service funding. Airjaldi is yet to get there. The rural Wi-Fi networks are allowed to interconnect with PSTN as an affordable rate. This is an example of a case, where a bottom-up initiative was transformed into a commercial entity.

3. Ghana Wireless Project (Ghana).

The Ghana Wireless Project was an initiative of Peace Corps volunteer from the USA in conjunction with the Apredie Community Center in the Akuapem Ridge area of the Eastern Region of Ghana owned by CBLIT. This case is defunct but there are efforts to revive it. The NGO had a VSAT infrastructure they were not using. John Atkinson, the Peace Corps volunteer saw this and came up with an idea. The idea was to redistribute the bandwidth from the VSAT to people in rural areas. He led the team of volunteers in working with the NGO to facilitate the network to people's homes. However the case became moribund when they could not get enough finances to facilitate more bandwidth from the ISP. This led to the degradation of service as more people were connected. Another ISP saw the market and decided to compete. The NGO had to fold up the operations. However, there are current efforts by local volunteers to revive the initiative. The only stumbling block they may face is that of competing with the mobile network operators, who began investing into the area, once they realized that people can afford the service.

3. Methodology

In order to answer the why question the Grounded Theory was adopted as the investigative tool. Data gathered from the 6 cases via qualitative interviews, were coded. This led to the development of the Community Based Network Mobilization (CBNM) models. Using the Strauss & Corbin tradition of Grounded Theory, open axial and selective coding processes were utilized to Theorize the CBNM Model (Strauss, Corbin, 1998). The concept identification was done via open coding. Grouping of the categories occurred during the axial coding process. The selective coding involves the process of theorizing around the core concept. The generalization for each case had to do with the search of events that led to action and interactions. These interaction resulted in the implementation of the infrastructure in each case. This process was carried for the individual cases. The six cases were then separated into two categories. These were the developed and developing country cases as seen in the table below. Further theorizations were carried out by cross-coding the outcome of the selective coding of each case. The aim was to find common events (causalities) that led to actions and interactions. These actions resulted in the implementation of the infrastructure in each context.

4. Findings

The Grounded Theory process resulted in two CBNM models. The first model was for the developed country cases. The second model was for the developing country cases.

5. CBNM Model for Developed Countries

Figure 1. CBNM Model for Developed Countries
Source: Williams (2015).

The factors or "why" the Community Based Networks developed the Broadband infrastructure in the developed countries we as following:

– the existence of vital resources,
– deployment possibilities,
– the usefulness of the technology.

The vital resources are a set of contextually unique resources available to the Community Broadband Network. These resources include inherent resource such as technical knowledge, inherent fabrication skills, financial resources, human resources, technical resources, self-determination and many other contextual factors. In the cases studied, the resources they possessed varied, hence the vital nature of the resources to the specific project was the reason it was called vital resources. Hence, if a similar project is to be enhanced, one has to identify the resources possessed by the potential Community Based Network. The existence of these resources imply that the network can be facilitated in a cost effective way leading to a reduced Capital Expenditure (CAPEX). An example can be seen in the case of Djurslandsnet, where most of the initial antennas were fabricated from metal scraps. An example can be seen Hence, the intrinsic knowledge to fabricate the access point in an innovative way was a vital resource for the group. Another example a crucial resource as seen on the field trip was the use of "natural base station" such as roof tops, hills, and elevated places. In the case of Hallary Broadband Coop, the greatest vital resource was the financial aid from the municipality. Once this major resource was provided, the coop organized the digging for the laying of the fiber optics. They also utilized their business and potential human resource to develop a business model for the sustainability of the project. The existence of these types of resources, made the cases realize that they can deploy the network.

The second factor that was common within the groups was the deployment possibility. In the case of Djurslandsnet, they had studied various ways by which the broadband infrastructure could be deployed. They earlier mooted on FTTH but later decided to go for Wi-Fi since they had the vital resources for it. In the case of Halaryd Broadband Coop, the municipality had initially deployed a Wi-Fi infrastructure. They were not satisfied with the data rates produced. The municipality area is also a storm prone areas, hence they decided on deploying FTTH. In the case of the Magnolia Road Internet Coop, the tests of George Watson as the proof that Wi-Fi was the way to go. Hence, they did think about the deployment possibilities.

The third factor was the perceived usefulness of the technology. This factor was important because, the cases studied were not telecom barren areas. In Djursland, there was fixed line telephony, but they lacked the Internet service. In The case of Magnolia Road Internet coop, they had Internet kiosks and fixed line telephony, but the data rates were low and they could not access the Internet from home. In the case of Hallaryd broadband Coop, they had access to mobile telephony, Asynchronous Digital Line (ADSL). However the Quality of Service of the mobile telephony was not acceptable to the resident and the ADSL infrastructure was not storm-proof. Hence, they were interested in facilitating a telecom technology that was storm proof. Hence, their choice of technology had a lot to do with the usefulness of the technology among other existing technologies.

Once the Community Based networks were satisfied on these three levels, they took action. Three probable actions were theorized. These were:

- the performance of more tests to ensure the capacity to deploy and sustain the network before proceeding to mobilize members,
- the mobilization of members, if enthusiasts they believe that they have the capacity to deploy the network and sustain it,
- the mobilization of members to raise an economy to sustain the trials and implementations.

6. CBNM Model for Developing Countries

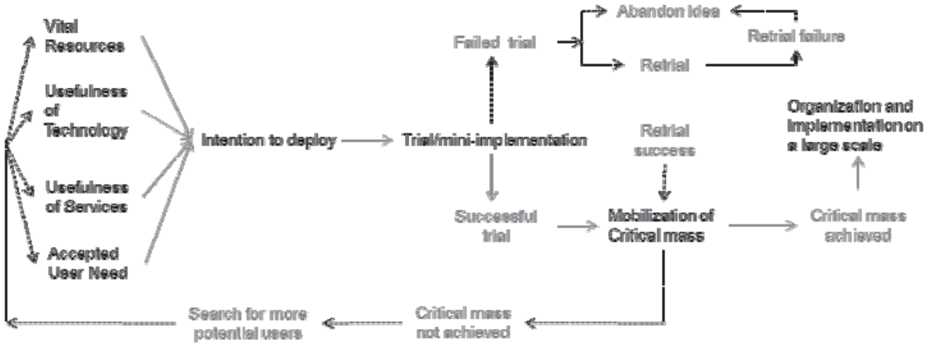

Figure 2. CBNM loop for Developing Countries

Source: Williams (2015).

Before presenting the CBNM Model for the developing country cases, it is important to explain the CBNM loop identified when theorizing for the developing countries. The the events or causal factors which led the Community Based Networks in developing countries to facilitate Broadband Infrastructure in the loop are similar to the CBNM model identified from the developed countries. These factors include :

– the existence of vital resources,
– the usefulness of the technology.

The vital resource in this model is not different from that of the first model. The specific resources may differ. An example is the Indian case, where Yahel had the knowledge of using laptop cards to fabricate access points. However, the context on the usefulness of the technology differs in the CBNM loop and later the CBNM model for developing countries. The usefulness of the technology here implies the capacity of the technology to deliver the desired service. Though similar in name to the CBNM model for developed countries, the context of the usefulness of the technology differ. However, if one looks into the future, as the diffusion of telecom networks of various standards and technology saturates rural areas or under served areas, the usefulness of the technology will be same as that of the CBNM model for developed countries. One would say that the context of the discussion in this paper identifies the usefulness of the technology, not as the capacity of the technology, but more of “why 5G instead of what we have?”.

The major difference factors in the CBNM model for developed countries and that of the developing countries were:

– the usefulness of the service,
– the actual usefulness of the serve.

In the developing countries cases studied, understanding the usefulness of the service was crucial but not enough. They had to see and understand the personal need for the service. In the case of the Ghana Wireless Project, the users saw Youtube services as a substitute for watching the local TV stations. They had the choice to choose the content they wanted. When the network was being promoted, the services touted by the enthusiasts were the emailing service. But once the first person adopted it and could see other usefulness of the service, those who could afford followed suit. In the case of the Johannesburg Wireless User Group, the enthusiasts identified gaming and academic collaboration, but the others who joined the network saw other benefits they could derive from the service. Hence the factor, "actual usefulness of the service"

The major difference between the CBNM model for developed countries and the developing countries occurs in the resulting action. In the developing country cases there was a bit of reluctance by people to join the community based networks. One can attribute this mainly to their inability to see themselves as telecom carriers. Hence the enthusiasts had to prop the intention to deploy by carrying out trials on a small scale. The small scale trial was due to the limited economic ability of the enthusiasts. Hence, they needed more people to achieve critical mass. The success of the trial led to new converts coming on board (mobilization). However, for the new converts to come on board, they had to be convinced that the group had the vital resources to deploy, the test results had to convince them (usefulness of technology), the resulting service should be seen as useful in general (usefulness of the service), they should see themselves using the service (the actual usefulness of the service).

This loop continues until a critical mass of members was achieved to deploy the infrastructure. The existence of the iteration led to the process being christened the CBNM Loop for developing countries. The existence of this loop is as a result of the enthusiast, who believe and see the possibility of the project. Having explained the loop, the CBNM model for developing countries can be seen below.

Figure 3. CBNM Model for Developing Countries

Source: Williams (2015).

7. Discussion

The emergence of the CBNM models provides an insight into how far Community Based Networks can go, if they desire to facilitate a network. What is important is having a group of enthusiast who can lead the rest. Community Based Networks are grass root networks, hence they understand the socioeconomic potentials of the people. In this manner they can facilitate a telecoms network with a business model appropriate to them. It is important to note that Community Based Networks are human institutions, hence certain human vises, such as corruption etc. may exist in some cases. However, in many cases, these democratic institutions possess mechanisms for dealing with such issues. On the flip side of the coin, one would also argue that telecom giants do collapse due to such social vises as well.

However, that does not write off the fact that Community Based Networks possess the ability to extend ICTs networks in underserved areas. In this manner, certain countries can attain their Universal Access and Service objectives. Hence, if 5G development and adoption is to extend beyond urban areas, then understanding why Community Based Networks develop infrastructure matters. This will aid telecom standard developers to consider the affordability or possible fabrication of the equipments, by which Community Based Networks will need. It will also require national governments to officially identify Commununity Base Networks as valid carriers. In this manner developing policies that will protect as well as facilitate the development of such networks, especially in areas where the market cannot cater for. In the case of 5G, this is the time for ex-Ante regulations that will aid these groups. Issues regarding spectrum acquisition, cost of access and deployment equipments, tax exemption on their status, cost of access to existing Fiber optic network, should be considered by national governments.

The reason 5G Wi-Fi is mentioned in this paper is because most of these Community Based Networks use Wi-Fi. 5G will be an intelligent network, it is difficult to imagine what 5G Wi-Fi would look like. It would be an advantage to Community Based Networks based on the CBNM models if all that is required is an upgrade of existing equipments. In this sense, these networks do not need to redeploy from scratch. If 5G Wi-Fi does not end up being an upgrade of the existing Wi-Fi standards, then using the CBNM model, thought should go into what will make the Community Based Networks still deploy Wi-Fi, especially in very poor areas. Such thought should include:

- the affordability of the cost of sensors and infrastructure equipment,
- the potential towards fabricating the Wi-Fi Access point equipment,
- the sustenance of Wi-Fi deregulation in many countries,
- the deregulation of Wi-Fi in countries that are yet to do so,
- the recognition of Community Based Networks as valid players in the market.

One may say that Community Based Networks that deploy FTTH may last longer than those deploying Wi-Fi is 5G Wi-Fi becomes a disruptive innovation. However, there could be some communities, despite all odds, who would still deploy 5G Wi-Fi in such a case. But the question would be: Is is worth it, closing the door to these budding Community Based Networks?

Conclusions

This paper was designed to discuss the potential relationship between Community Based Networks and 5G-Wi-Fi diffusion and adoption. The Community Based Network (CBNM) Models were used in this paper to buttress the arguments for recognizing Community Base Networks as valid telecom carriers. The models were also used to make an argument for why 5G Wi-Fi Standards should not be a disruptive innovation. The models also presented reasons why Community Based Networks deploy telecom networks.

Based on the findings, this paper concludes that the rural development of 5G is possible using the vehicle of the Community Based Networks. However, from the standard development point of view, 5G Wi-Fi should be promoted. Most importantly, this paper calls for the recognition of Community Based Networks as valid telecom carriers if the Universal Access and Service of 5G will be achieved.

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SIECI SPOŁECZNOŚCIOWE A 5G WI-FI

Słowa kluczowe: sieci społecznościowe, łącza szerokopasmowe

Streszczenie: W artykule wskazuje się powody, które przemawiają za tym aby uznać sieci społecznościowe za potencjalnych dostawców 5G korzystających z Wi-Fi 5G. Argument wskazane w artykule są oparte na ustaleniach badania mającego na celu zrozumienie, dlaczego sieci społecznościowe rozbudowują infrastrukturę telekomunikacyjną i szerokopasmową. Badanie było jakościowym badaniem przeprowadzonym przy wykorzystaniu metody indukcji oraz ugruntowanej teorii. Zbadano sześć przypadków. Zidentyfikowano dwa modele mobilizacji w sieciach społęcznościowych. Odkrycia wskazują, że wdrożenie sieci Wi-Fi 5G przez sieci społecznościowe jest możliwe, jeśli opracowane zostaną odpowiednie inicjatywy polityczne i standardy Wi-Fi 5G.

Tłumaczenie Maciej Czaplewski

Cytowanie

Williams, I. (2018). Community Based Networks and 5G Wi-Fi. *Ekonomiczne Problemy Usług*, *2* (131/1), 321–334. DOI: 10.18276/epu.2018.131/2-31.